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ABSTRACT

Due to their more diverse populations, urban colleges have different concerns than suburban and rural colleges, and they must provide programs and services specific to those concerns. The question arises as to whether urban college effectiveness can be measured with traditional indicators. The declining test scores in American public schools have led to the concept of "accountability" for performance levels, but the paper proposes that other factors also be included in the evaluation of community colleges, since so many of their students have non-degree objectives. All attendees at three Texas urban colleges are studied, in order to answer the following questions: (1) What are the major reasons students attend urban community colleges? (2) Do these reasons differ among the three colleges studied? and (3) Are there any evaluative factors that should be, but are not, used for these colleges? Results show that 64% of the students were not enrolled in a degree-seeking or academic track, and the largest number of these students, 19% of the total sample, were there for short-term work-related training. Neither sex nor ethnicity were found to be a factor in whether students chose a degree-seeking or non-degree track. The paper suggests that academia needs to recognize this lack of interest in academic credential by many students, and evaluate college performance accordingly. Contains 13 references. (VF)

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Measuring Success in Texas Urban Community Colleges: What *Should* the Indicators Be?

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June 2, 1999

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Contents

Page 1. Introduction

Page 2. Theoretical Perspectives

Page 3. Background and Significance

Page 4. Research Questions and Procedures

Page 5. Sample

Page 6. Design, Data Collection Procedures, and Analyses and Findings

Page 7. Logical Statistical Reasoning

Page 8. Descriptive and Inferential Analyses

Page 11. The "Non-Student."---Qualitative Analysis

Page 12. Summary and Conclusions

Page 14. Implications

Appendix

Page 15. Statistical Formulas

Page 16. Top 30 Largest Employment Occupations

Page 17. Job Requirements for 1993 - 2000

Page 18. Where did Our Students Go?

Page 19. What Employers Want From Employees

Page 20. Job Projections by TechForce 2000

Page 21. Increase in Labor Force by Gender.

Page 22. ***References***

Measuring Success in Texas Urban Community Colleges: What *should* the indicators be?

Introduction

If seeing is believing, then one must believe Texas has serious problems in establishing acceptable performance measures for it's higher education system. As I write the introduction to this study, the seventy-sixth legislative session is going "full blast", and this issue is one of several problematic topics they have on the table. Accountability is the call of the day, but what establishes accountability? This word is easy enough to say, but identifying "meaningful" measures of it seems to be giving our good elected officials the "sixth street blues". Given its current usage, accountability appears to be a *construct* or *abstract concept* whose definition and measurement seems largely dependent on who is defining it.

Since accountability and institutional success seem to be connected, then it follows logic that success be measured in a relative and meaningful way. This measurement should not be ambiguous, and should be void of grayish political type sub-measures. But relativity and meaning have been illusive variables on this issue. One problem is there are several types of colleges in Texas, consequently, missions and purposes of the various types of colleges are not consistent. However, it is these objectives, and outcomes resulting from them, which are used to measure institutional success, or lack of it. This is the situation nationwide according to the Community College Round Table, (1994), and Doucette and Huges, (1994). It is also true in the Lone Star State today.

Not only are community colleges greatly different from universities, but also each other (High, 1998). Texas community/junior colleges can be divided into three groups. They include urban, suburban, and rural. Although the spreading-out of some urban colleges give them the look of quasi-suburban, they still are urban based on their missions, overall student population, and because they identify themselves as being urban colleges. There are some common factors among these colleges; they seem to have more diverse populations and are faced with concerns and issues germane to that diversity. To address these concerns and issues, urban community colleges are required to provide a myriad of programs and services. Maurice Weidental (1989) conducted site visits on urban community colleges in nine states. He found these colleges providing education, training, survival skills, GED service, help to the homeless and other disadvantaged, and handling large numbers of "traditional students." Based on their 1987 study, Louis Bender and Richard C. Richardson indicated that these urban colleges provide an *urban educational pipeline* to many urban residents.

Because of these special factors, a serious question has surfaced. Can the effectiveness of these institutions be adequately measured using traditional indicators? Given the scope of functions handled by these colleges, this seems to be a reasonable question. If current measures are inadequate, then the public does not have a *true* picture of how these institutions use resources to fulfill their missions. That being the case, their images and their funding could be negatively impacted.

Theoretical Perspective

Much is being discussed about using the number of graduates to measure success at institutions. Letter grades received in academic core courses is also being considered as a possible measure. The assumption here is most students attend our colleges to pursue a degree or some other academic outcome. Many do; it would be appropriate to measure this group using those criteria. However, less than 30% of the population get bachelors degrees. What about the other 70% or so? Shouldn't their goals and aspirations count? The way we measure educational success has changed drastically over the last few decades. We seem to be basing those measures on something, but can't quite figure out what it is, or what it should be, nor do we understand why it keeps changing.

It is fascinating that we consistently reflect on the wisdom of our forefathers to help us resolve some social or political delimma, but don't do the same when education is the issue. Can we continue to make the rules as we go to satisfy political fancies and conform to acceptable contemporary social thought? Principles and practices in education must be regularly and critically examined. If this does not happen, all that is particular to the educational process will forever be limited in scope and vision. I would argue , that to measure the effectiveness of institutions and of education, one must first determine what the aims of education are. Are they all centered around passing the Texas Academic Skills Program (TASP) and obtaining a degree? Does that alone make institutions more effective or society better off? Though education was initially available only for the *social elite,* the Morrill Act of 1862 through land-grant colleges, provided a means by which all capable people could pursue Higher Education goals.

Horace Mann, one of the greatest education thinkers in our history, believed in progressive thinking in education. Much is written about Mann's "Common School". The basic tenets of this initiative were based on inclusiveness and openness to "non-traditional" ideas and concepts. William James was another thinker of note. His ideas on *Pragmatism* would be useful today, if used. James believed students' interest should be considered in every step of the education process. He also believed that absolutism and dogmatism were unacceptable and should not be encouraged in education. James advocated that real educators sought to reach a wide variety of learners.

In 1938, the *Education Policies Commission* issued an important report relative to the purposes of education in America. The four major purposes included: (1) Self Realization, (2) Human Relations, (3) Economic Efficiency, and (4) Civic Responsibility. During that same year, John Dewey took the position, that education represents "continuous changes and processes of life". Dewey argued vigorously, that education goes beyond the "three R's", and that it implies both, discipline of thinking and the

desire to express one's creativity. Finally, Frederick Mayer (1966) argued that education not only suggests intellectual growth, but also emotional maturity and ethical awareness.

Two major themes should be obvious here. First, all of the previously mentioned are considered authorities in the field of education. Second, all concur educational aims go beyond academics. One has to wonder what measures they would use to determine success. The interest of the student and well being of society are important factors in all of their philosophies. It is a good bet these are the factors they would consider if asked to measure success of an institution.

Background and significance

Before we arrived at this point, college funding was, more or less, based on some type of formula. Most of these did not include the performance factor. This method of funding is quickly disappearing, and being replaced by performance based funding. Like other aspects of our educational system, this movement can be credited to Western Europe. Most of the systems there are national systems. Having one system rather than many systems allowed performance based funding to come about with little difficulty. In the U.S., several states made the switch from formula to performance based funding over the last ten years, and some now serve as models to other states who are anticipating that move. The push for accountability immerged in the mid-1980s as a result of several studies uncovering serious problems in public schools, including colleges. The public was shocked, wondering how this could happen. This led to the push for assessment of academic skills, and more. By 1990, one study conducted by the *Education Commission of the States* showed there were 40 states that were involved in assessment. The creation and implementation of performance indicators were not far behind. Gaither, et. al. (1995) indicate that eighteen states had developed indicator systems by 1994.

Texas has not been exempt from education performance problems. Texas is below the national average on SAT and ACT scores (College Board, 1998). And some studies have shown that we have no institutions in the top-50 National or Liberal arts universities. As with the rest of the country, our education woes brought about assessment; it came in the form of the Texas Academic Skills Program. There has been some talk that performance on this test could be used as a performance measure. The "Texas Study" (1997) showed clearly that institutions with large minority enrollments (urban community colleges) perform systematically lower than other institutions. This study's validity was supported by a similar study in 1998, entitle "The Disparity Between Urban, Suburban, and Rural Colleges on TASP Performance". This study examined the records of over 9,000 students from the three types of community colleges, and its findings were consistent with those of the "Texas Study". These minority students are the same ones under served in Texas secondary schools.

Based on this information and the types of populations served by urban community Colleges, many believe more funding is needed at these colleges, not less. Further more, providing less funding for heavily minority-populated colleges could be misconstrued in a number of ways. These are the types of problems we face in determining indicators to use to measure performance and institutional success.

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Finally, as we look back on the emergence of the assessment movement to the current performance measures movement, I wonder if maybe we have lost sight of the big picture? Because of the failure in elementary and secondary schools, we hurry about to re-educate or send students through remedial classes, but have forgotten all the other functions these colleges do. We do prepare students to transfer to four-year colleges and award degrees, but we provide other services as well. Should those be completely over looked or downplayed as performance measures?

Research Questions

The research questions in this study will hopefully provide insight as to why people attend urban colleges, and to ascertain if there are other viable non-traditional methods of assessing these colleges.

Question # 1: What are the major reasons students attend urban community colleges based on first contact information from three typical urban Texas community colleges?

Question # 2: Are the reasons students attend these urban community colleges significantly different between the three urban Texas colleges studied?

Question # 3: Are there any qualitative factors that may have implications for performance measures at these colleges, but have not traditionally been used?

Procedure

Population

The target-population for this study includes all students enrolled at Texas urban community colleges for the fall semester of 1998 and spring, 1999. The three colleges selected for this study were chosen, because they closely match the *typical* Texas urban community college on important characteristics based on review of documents provided by the Texas Higher Education Coordinating Board, data obtained from the Texas Community College Teachers Association, and data obtained from those colleges.

It is understood that findings from this study are applicable only to Texas urban community colleges. This is a result of the rigidity of the operational definition of this variable. That definition is given in the definition section.

Sample

The sample used for this study was randomly selected at each of the participant colleges. The sample was taken from sampling frames of all students enrolled at the

individual institutions for the '98-'99 school year. This sample is representative of the three selected colleges, which are in turn, representative of Texas urban community colleges for the school year included. The sample is only important to the degree the researcher is able to infer statistics to population *parameters*, or make unbiased estimates based on those statistics. The sample size for this study is (n = 464). This sample size was predetermined based on a standard formula. That formula is included in the appendix section. This sample size statistically allows for only +/- 4.6% sampling error at the 95% confidence level. The formula allows for a range of values (10% confidence interval) for which the researcher is 95% certain the true amount of error will fall, but will not exceed.

Most research is subject to two types of error, sampling and non-sampling. The researcher has it within his/her control to reduce sampling error. As no standardized measuring instrument is used, most error in this study can be controlled with adequate sampling. A large sample adds to external and internal study validity as well as allowing for segregation by subgroups, and subgroup analysis. *The law of large numbers* indicates that large randomly drawn samples are more likely to posses characteristics found in the population from which it was drawn. The sample was heterogeneous. Table I highlights the sample profile.

Table I

Sample Profile

(School)	(SEX)	(Ethnicity)
HCCS	Male = 75 Fem. = 125	White = 71 Black = 58 Hispanic = 35 Other = 36
DCCCS	Male = 48 Fem. = 100	White = 51 Black = 64 Hispanic = 24 Other = 9
SACC	Male = 54 Fem. = 62	white = 55 Black = 10 Hispanic = 49 Other = 2
	N = 464	

Design

This study is a *descriptive* study. In this type research the data are limited to simply describing some behavior (Moore and McCabe, 1993). No independent variables were manipulated to determine their effect on a dependent variable, and being a form of ex

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post facto research, no explanation for behavior is determinable. The focus is to determine the reason students attend these colleges and to make accurate estimates from sample to population. The variables of interest in this study include Ethnicity, Age, Sex, and reason for enrolling. No instrumentation was used in this study. Data was taken from institutional documents, and only demographic and factual data were used. Also, qualitative data was obtained by interviews from student service personnel at the annual conference for the Junior/Community College Student Personnel Association held in El Paso, Texas in October, 1998 and telephone interviews with counselors at four colleges during the spring semester of 1999..

Data Collection

The researcher contacted research departments at the four colleges to explain the scope of the study and to seek assistance, each agreed to participate in the study. The variables of interest and sampling procedure were discussed in detail. Each institution advised the researcher of the random procedure to be used. For ethical reasons, it was decided no names or other personal identifiers would be used. Upon receiving the raw data the researcher reviewed it to be certain it conformed to the aforementioned criteria. Moreover, the data was checked for completeness and legibility. All data received from the four schools conformed to the guidelines specified by the researcher. these colleges. When all data were examined and cleared, a codebook was created and the data were interred into the GBSTAT computer program for manipulation. The data were divided into six major categories as to why the students' indicated they were attending these colleges. Those categories or *objectives* were as follows:

1. Preparing for a job in a new field.
2. Improve skills on present job.
3. Prepare for promotion or better job.
4. College transfer classes and pursuit of some type of degree. (i.e. Bachelors. AA, AS, AAS).
5. Personal interest or enrichment.
6. Undecided.

These categories are mutually exclusive, and a student can only be a member of one. There were no duplications, and the data consequently is nominal level count data.

Data Analyses

To address the major questions of this study both, descriptive and inferential statistics were employed. This was necessary to go beyond the sample to all Texas urban community colleges. Question #1 will be covered first and then 2. The interview information will follow the statistical analyses and will cover the final research section. The Descriptive data will highlight factual and superficial information and the inferential statistics allow us to make estimates as to the reasons students attend all Texas urban community colleges. This section starts with the logical reasoning, then goes to relevant

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descriptive and inferential analyses to address the first two questions, and concludes with qualitative analysis to address question three. A summary is given at the end of the section.

Logical Statistical Reasoning

The underlying logic in this study is grounded in basic probability theory. Using a fairly large random sample allows legitimate estimates of a stated population. This is possible, because of what is already known about the *standard normal distributions* and *sampling distributions*, as well as the *Law of Large Numbers, The Central Limits Theorem*, and more. When a random sample of size (N) is taken from a given population, its *statistics* (except the standard deviation) are thought to be unbiased estimates of the population *parameters in* must cases. This is particularly true when the random sample is reasonably large. The researcher can compare a computed test statistic against a table value (from the appropriate table) and thereby make good estimates of what the target-population values are. Given these normality traits, statisticians have ascertained that error behaves in certain ways and therefore can be estimated.

To make these leaps from sample-to sampling distribution-to population certain rules must be adhered to. (1) The target-population must be clearly identified; (2) The characteristic or attribute of interest and it's measurement must be clearly identified; (3) The researcher must pre-determine the amount of risk he is willing to take to be wrong (Confidence level); (4) The appropriate sample size must be determined and randomly selected from the population; and (5) Finally, appropriate test statistics must be computed and compared to the critical values to determine if there is significance at the pre-determined level. There is more, but these are the crucial steps.

The population in this study is students at urban Texas community colleges. The colleges from which the sample was drawn can be termed an *experimentally accessible population (*Borg and Gall, 1989*)*. These colleges are similar to most urban community colleges in Texas. Therefore, the sample results must first be representative of the schools from which it was drawn, and those schools in turn must be representative of Texas urban community colleges. Steps were taken to assure that a random sample was collected from representative schools, which are common to urban community colleges in Texas using all of the above procedures. Based on this logic, the results from this sample can give valuable information about the reasons students attend these colleges.

Logically, performance measures should be closely tied to the reasons students attend these colleges. These reasons are normally associated with the mission (s) of the colleges. If students have been successful in their educational endeavors, and if those endeavors are within the scope of the college mission, then that college has also been successful. The reason students indicate they come to college should be the criterion used for performance measures. Moreover, those reasons should be segregated into categories and weighted proportionally. If only 30% of students come to these colleges to obtain a degree/certificate, then only that percentage of the measure should be based on degrees/certificates. If this is to be the case, colleges will need to devise a better method of tracking students. It has been common practice to report what percent of students

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completed degrees, certificates, etc, but not how many of these started out to do so. Consequently, one can only compare rates from college to college, not taking in to account types of colleges or missions of individual colleges.

Descriptive Statistics and Inferential Analyses

Several analyses were done with the available demographic data to determine if the data were severely skewed. It was determined that the data met the assumptions for inferential analyses on the variables to be included in that analysis.

Question # 1: What are the major reasons students attend urban community colleges based on first contact information at three typical Texas urban community colleges?

The sample data showed 36% of the students in this sample were on some type of degree or academic tract. Moreover, it was found that 64% of these students attend classes for non-degree/non-academic purposes. Of the five categories of students not seeking degrees, category one, those preparing for jobs, had the greatest number of students. Nearly 19% of the total sample was in this group. The percent that are undecided or attending for personal interest (both 9%) were about equal. These were the lowest percentages in the research sample. The following table highlights the major reasons students in the sample attend these urban colleges by objective.

Table II
Student Objective by College

Objective	HCCS	DCCC	SACC	Tot	%
1	49	17	22	88	19
2	42	20	13	75	16
3	14	32	3	49	11
4	65	55	49	169	36
5	12	16	13	41	9
6	18	8	16	42	9
	N=200	N=148	N=116	N=464	100%

Table two shows the distribution of educational objectives by school. In addition, Chi-square tests oh homogeneity were conducted for the variables "SEX" and ETHNICITY" to determine if the reasons students gave were associated with their being male/female or

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White, Black, Hispanic, or some other ethnicity. Neither analysis proved significant at the .05 level ($X^2 = 2.9$, df = 1, p <.50, and $X^2 = 2.3$, df = 3, p <.09.). The data were collapsed into two categories (degree seeking, 36%, and not degree seeking, 64%). Several analyses were conducted to ascertain if the observed sampled differences could be expected to exist in the population of urban colleges in the state, and to establish good estimates of what the percentages would be in that population. In each analysis the students' choice of academic/degree track or non-degree track was the criterion variable.

First, confidence intervals were established for the 64% of non-academic tract students identified in the sample. The computations revealed a confidence interval of +/- 4.5%. This indicates that between 59% and 68% of these students do not come to get degrees. When (Z) analyses were conducted to ascertain the likelihood of finding the same disparity between degree seekers and non-degree seekers in the population, a significant difference was found at better than the .05 level (Z obtained = 5.44, p. <001.). The population of urban colleges in Texas is nearly certain to have similar characteristics in regard to students' reasons for attending these colleges. The following charts highlight the statistical findings

Table III
Analyses for Question #1

Chi-square Analyses Sex x Objective	$X^2 = 2.3$ Non Significant
Ethnicity x Objective	$X^2 = 2.9$ Non Significant
Confidence interval for Non-degree percent Of 64%	59.1-68.1 @ +/_ 4.5%
Z comparisons for Degree and non-degree Tract students (36% vs. 64%)	Z obtained = 5.44 sig. @ .001
All comparisons based on 2-tailed probability @ 95% C.L.	

The statistical information in table three shows that neither sex nor ethnicity has a significant impact on the reason students chose a degree track or non-degree track in Texas urban community colleges. The confidence interval constructed is a function of sample size and the level of confidence (95%) established prior to the hypothesis test, and there is a 95% chance out of a hundred that the true population percent lies between 59-68 percent. The (Z) score of 5.44 indicates that there is a 99.9% chance that the sample values of students attending for degree/non-degree purposes are similar in the population. Figure 1 below gives a pictorial view of the disparity between the students attending

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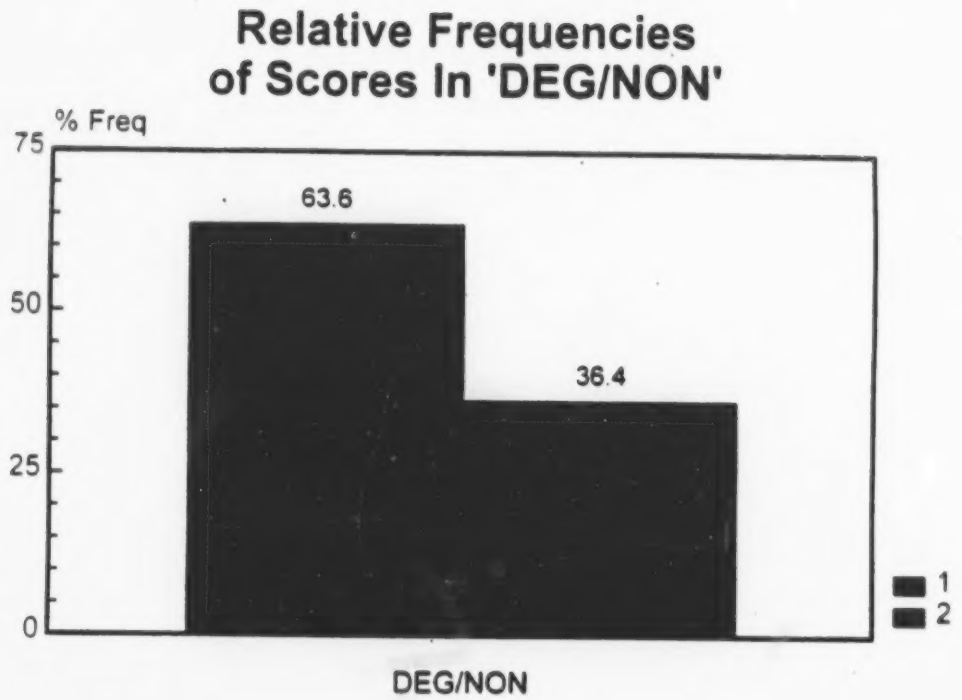
urban colleges for degree purposes versus those attending for other reasons. The amount of disparity between those students coming for degrees, and those not is obviously great. The (Z) comparison indicates this as well.

Figure I



Question #2: Are the reasons students attend these urban community colleges significantly different between the three urban colleges studied?

The two categories of degree and non-degree track students were entered into a 2x3 contingency table with the three colleges, and the chi-square test for homogeneity was conducted. The test statistic ($X^2 = 3.05$, $df = 2$, $p < .22$.) was not significant at the .05 level. This test is a measure of how close the populations are on a criterion measure (degree or non-degree tract). A significant value would indicate population differences, lack of a significant difference indicates the populations are not significantly different on

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the criterion measure. Table four depicts the 2x3 contingency table indicating the three colleges and student objective patterns.

Table IV
Contingency Table
Schools x Student Objective

	HCC	DCC	SAC	Tot.
Non-degree	135	93	67	295
Degree	65	55	49	169
	200	**148**	**116**	**464**

$X^2 = 3.06$, df = 2, p <.22

The test proved that these colleges are very similar in regard to students' objectives, and the contingency table reveals all three colleges have fewer people whose objective is to get a degree than those on a non-degree tract.

Question #3: Are there any factors that may have implications for performance measures at these colleges, but have not traditionally been used?

The "Non-Student"

The previous section focused on measurable factors. Many individuals receive services from these colleges and do not appear in any statistical tables. In interviewing counselors, advisors, and other first-line student services personnel, it was noted many people receive services without ever completing an application. Because these campuses are virtually in the heart of these communities and are *student friendly*, many people simply stop in for information on workforce trends, career counseling, advise on career paths, external agency referrals, and much more. Because no records are kept of these people they are virtually invisible to administrators and college research departments. Some counselors estimate that, between registration periods, approximately 25% of the people they see fall into this category. All though most sign-in sheets reflect this, there is no distinction between a visitor being a student or not. Even when these people are identifiable, the numbers are not used in institutional statistics, because they are not seeking a degree or certificate, and do not fall in to a traditional college tract.

Because there is no application or record for these people, they are essentially *"Non-Students"*. This consequently creates a new function of urban community colleges. We have labeled this function as the "*Invisible Latent Function of the Urban Community*

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College". It is highly recommended these urban colleges quickly acknowledge this function and tap into this group as a resource, which further addresses institutional goals. If accurate and reliable numbers were kept on this group it would create another category which may evolve in to another viable performance measure.

Summary

The findings based on the chi-square analysis, (Z) comparisons, and descriptive analysis show most students registering during the period studied were not seeking degrees. Moreover, out of the five objectives not related to degrees, job preparation ranked number one. There is a strong statistical argument this observed pattern is consistent in all urban Texas community colleges. Finally, a large segment of "Non-Students" are served, but appear to be invisible to administrators.

Conclusions

The data clearly show urban community colleges are busy doing more than handing out degrees. When attrition is factored in, this estimated proportion of 36% is extremely close to the state figure of 27% reported by the Texas Higher Education Coordinating Board (THECB) for 1995. With numbers so skewed toward non-degree objectives, one would wonder why colleges and educational agencies would put so much significance on the degree-seeking portion of their student body, but so little on the others. Data alone does not always paint a complete picture or give direct answers to our questions. Max Weber, the great German Sociologist indicated we must use Verstehen, or interpretive understanding of our environmental experiences to help explain certain phenomena.

Following this train of thought, there are several possible reasons that would explain this. First, is a concept called *Credentialism* (Collins, 1979). This is the raising of the minimal level of education required to enter a particular field and the level of "Social Esteem" we as a society associate with degreed people. In today's society Credentialism is quickly becoming a thing of the past as job trends and requirements evolve toward the 21st century. Secondly, we could possibly be reluctant to accept obvious social and economic change. We see it, but we don't believe it. The fact that only 36 % of these students come to get degrees should be an indication that 'times are a changing'. Moreover, that the largest non-degree group is those preparing for new jobs is also a tale-tale sign of this change. Records show that many students come to take one or two classes in preparation for employment, once done, they go to work somewhere. All available data show this trend. Many of the non-degree type students are attending these urban community colleges for workforce training. The *Credentialism* trend has decreased and is giving way to short-term narrowly focused training/education. Data indicate employers now want their people to have short term schooling; up-to-date relevant training; technological competency; learning over the lifetime; and human relations skills. Techforce 2000, a division of the Texas Workforce Commission, projects many people will be over qualified for available jobs and 60% of new positions will only require associate degrees or less.

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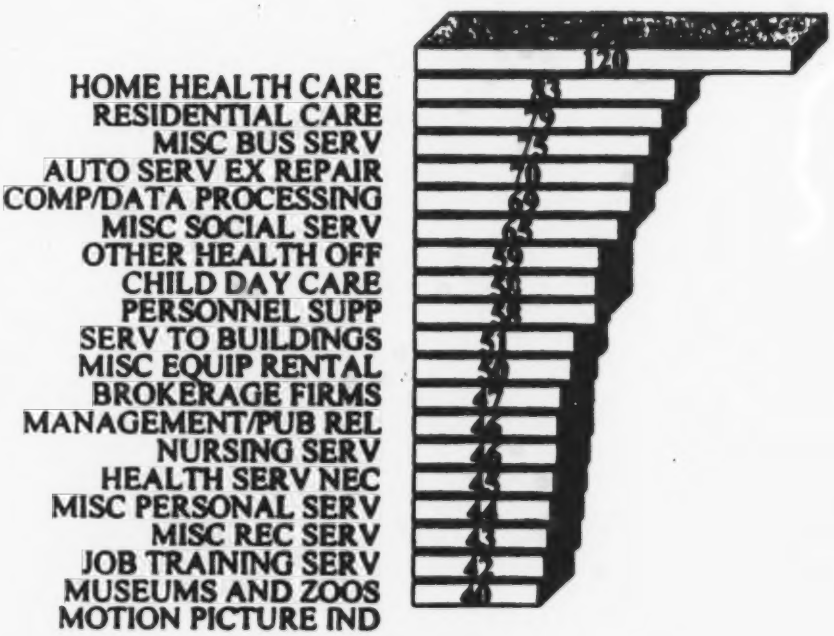
All available trend statistics indicate movement toward service-related industries requiring shorter and more specified training, and an increase in the number of women entering into these fields. The increase in the number of non-degree seeking individuals is likely a result of this trend. All of these clear indicators can not and should not simply be ignored. Industry is aware of this situation, but the academic world has been a little *tardy* to grasp this reality. Maybe we are simply attempting to hold on to the old school of Credentialism. Whatever the reason, it is not likely that these schools can continue to be productive and ignore the top projected growth areas. Nor can state agencies claim to have relevant and accurate measures of performance with out accurate data in regard to the reason students elect to attend a college or school. This is the only true measure as to how effective a school has been. Following is a table to indicate the top 20 employment growth industries, there is more included in the appendix section at the back of this document.

Table V

TOP 20 EMPLOYMENT GROWTH INDUSTRIES 1994-2005

(percent)



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Some classes people take in the non-degree category are academic, but they may need only one or two. If they come to take these classes for job preparation, to improve current skills, or for personal interest and do so, they have been successful. However, because of the focus on degrees, they could very well show up as a retention problem statistic. When

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this is really a simple case of *positive attrition*. They are actually successes rather than problems. The reality is students who state an objective, and fulfills that objective has been successful. It is not necessary for a student to pursue or receive a degree or certificate to claim success. It is only when that is the objective that it should be used as a measure of success. Although the literature is replete with statistics denoting the percent of students receiving degrees and certificates, there is little or none indicating how many started out to do so. So, with out a starting measurement, how can an ending measurement have meaning. Moreover, if it is to be compared to some criterion that criterion should be similar to what is being measured. Do urban, suburban, and rural community colleges have a similar proportion of students seeking degrees? Are their populations that much alike? Is one or one set of performance measures adequate for all?

Implications

The findings of this study have several implications in regard to performance measures and attrition rates for urban community colleges.

1). The major portion of the students attending urban colleges is not seeking academic credentials. So, it would be inappropriate to make this a major factor if and when performance measures are determined. There are strong implications this will be true at all or most urban colleges in the state. If the number of degrees/certificates are to be a criterion, then a pre-measure of the percent of students starting out for degrees/certificates will need to be determined for colleges.

2). Urban colleges are providing far more services than they are taking credit for. If they could develop accurate measures for this group, they may find that their goals and objectives are being met more efficiently than they realize. The "non-student" concept needs to be explored to ascertain if this is a possible measure to use along with other traditional measures.

3). Because the greater proportion of students attending urban colleges are non-degree seeking, it is highly likely the retention and attrition statistics could be misleading. Students who take one or two classes for personal interest, to get a new job, or to improve skills on current job will do so and move on. Many of those classes may be academic, computer, business, or otherwise workforce related. They are there one semester, and gone the next. Are they an attrition problem? No! They are really a success, but not looking for a degree or certificate.

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APPENDIX

Formula used to determine sample size.

SAMPLE SIZE FOR DESIRED MARGIN OF ERROR

The level C confidence interval for a proportion p will have margin of error approximately equal to a specified value m when the sample size is

$$n = \left(\frac{z^*}{m}\right)^2 p^*(1 - p^*)$$

where p^* is a guessed value for the true proportion.

The margin of error will be less than or equal to m if p^* is chosen to be 0.5. This gives

$$n = \left(\frac{z^*}{2m}\right)^2$$

Formula used to compute (Z) for sample proportions

$$Z \text{ (obtained)} = \frac{(P_{s1} - P_{s2}) - (P_{u1} - P_{u2})}{\sigma_{p-p}}$$

where $(P_{s1} - P_{s2})$ = the difference between the sample proportions

$(P_{u1} - P_{u2})$ = the difference between the population proportions

σ_{p-p} = the standard deviation of the sampling distribution of the differences in sample proportions

Formula used to establish estimates for population of urban colleges at the 95% confidence level.

$$\text{c.i.} = P_s \pm Z\sqrt{\frac{P_u(1 - P_u)}{N}}$$

(P_u is equal to a constant of .5)

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TOP 30 LARGEST EMPLOYING OCCUPATIONS (2000)

OCCUPATION	EMPLOYMENT 2000	EDUCATION/TRAINING PREFERRED
TOTAL ALL OCCUPATIONS	9,617,400	
TOTAL TOP 30 OCCUPATIONS(40.5%)	3,897,650	
1. SALESPERSONS, RETAIL	293,500	EMPLOYER TRAINING
2. GENERAL OFFICE CLERKS	259,750	SPECIALTY TRAINING
3. GENERAL MANAGERS/TOP EXECS	246,400	4 YEAR DEGREE
4. CASHIERS	228,750	EMPLOYER TRAINING
5. SECRETARIES, EX LEGAL & MED	225,650	SPECIALTY TRAINING
6. FIRST LINE SALES SUPERVISORS	173,800	4 YEAR DEGREE
7. BOOKKEEPING/ACCOUNT/AUDITING	149,450	SPECIALTY TRAINING
8. JANITORS & CLEANERS	143,200	EMPLOYER TRAINING
9. CHILD CARE WORKERS	137,000	EMPLOYER TRAINING
10. HELPER, LABORER, MOVERS, NEC	134,350	EMPLOYER TRAINING
11. FARMERS	123,950	SPECIALTY TRAINING
12. REGISTERED NURSES	123,900	2 YEAR DEGREE
13. SALES REPS, EX RETAIL, NEC	123,100	EMPLOYER TRAINING
14. WAITERS & WAITRESSES	121,650	EMPLOYER TRAINING
15. FOOD PREPARATION WORKERS	121,200	EMPLOYER TRAINING
16. FIRST LINE SUPERVISORS, CLERICAL	115,550	4 YEAR DEGREE
17. TEACHERS, SECONDARY SCHOOL	115,550	4 YEAR DEGREE
18. FOOD PREP/SERV FAST FOOD	115,150	EMPLOYER TRAINING
19. TEACHERS, ELEMENTARY	108,900	4 YEAR DEGREE
20. TRUCK DRIVERS, HEAVY	107,000	SPECIALTY TRAINING
21. MAINTENANCE REPAIRERS, GEN UTIL	103,500	SPECIALTY TRAINING
22. NURSING AIDES & ORDERLIES	102,350	SPECIALTY TRAINING
23. MANAGERS/ADMINISTRATORS, NEC	96,300	4 YEAR DEGREE
24. ACCOUNTANTS & AUDITORS	85,650	4 YEAR DEGREE
25. GUARDS	85,500	EMPLOYER TRAINING
26. HOME HEALTH AIDES	85,050	EMPLOYER TRAINING
27. TRUCK DRIVERS, LIGHT	77,800	SPECIALTY TRAINING
28. RECEPTIONISTS, INFORMATION CLKS	77,150	EMPLOYER TRAINING
29. SERVICE SUPERVISORS, NEC	72,450	SPECIALTY TRAINING
30. LICENSED PRACTICAL NURSES	69,050	SPECIALTY TRAINING

NOTE: EMPLOYER TRAINING INCLUDES OJT OR SIMILAR SHORT TERM INVESTMENT. SPECIALTY TRAINING INCLUDES TECHNICAL, APPRENTICESHIP, OR OTHER VOCATIONAL PREPARATION.

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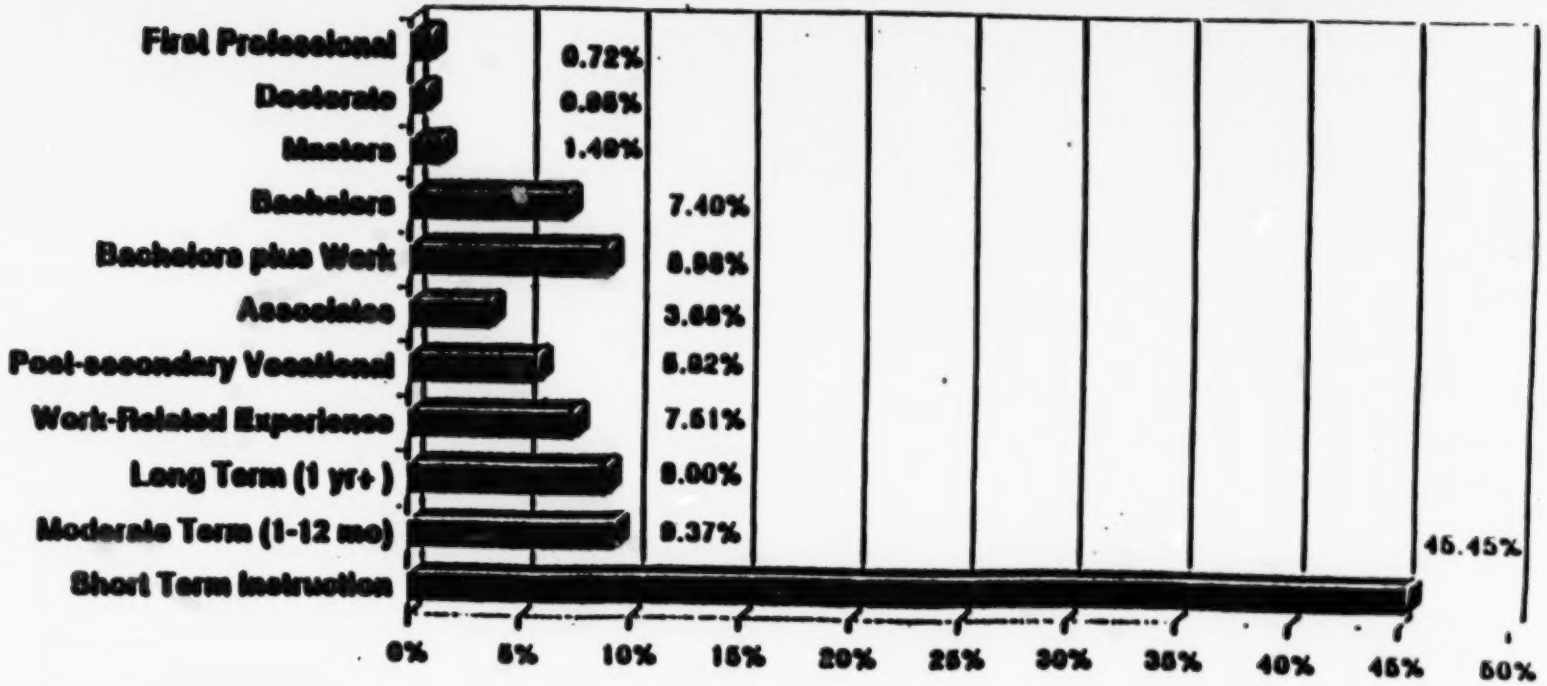
Education Requirements for Texas State Annual Average Job Openings 1993-2000



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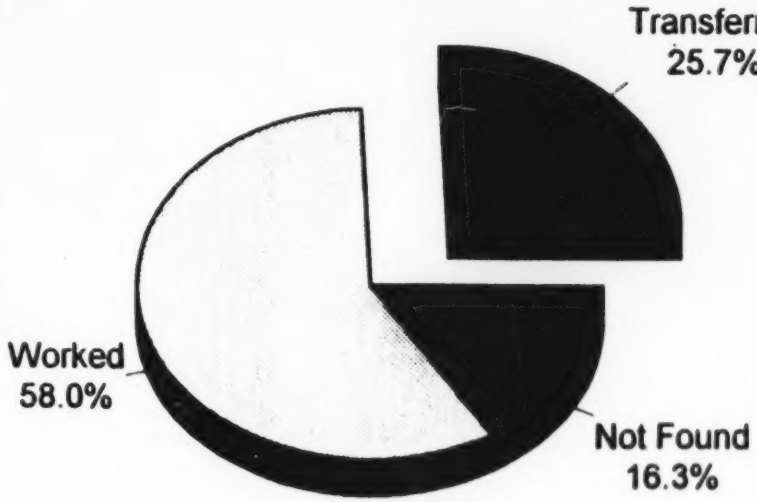
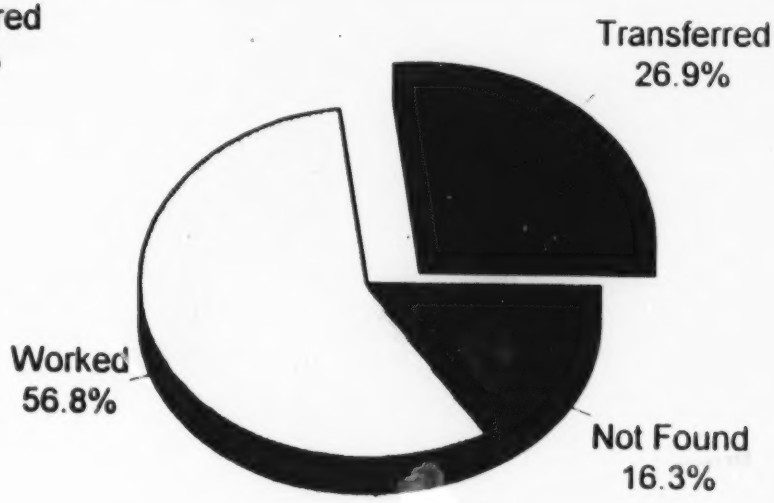
WHERE DID OUR STUDENTS GO?

Fall 1996 Enrollees Who Did Not Re-enroll Fall 1997

Transfer is defined as those students who attended HCCS in the fall of 1994 but did not re-enroll at HCCS in the fall of 1995. Instead, they enrolled or co-enrolled in a Texas public university in the fall of 1995.





HCCS Totals
42,622 Students

State Totals
424,594 Students

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Based on Texas Higher Education Coordinating Board 1994-95 Student/Adult Learner Follow-up

What Employers Want from Employees

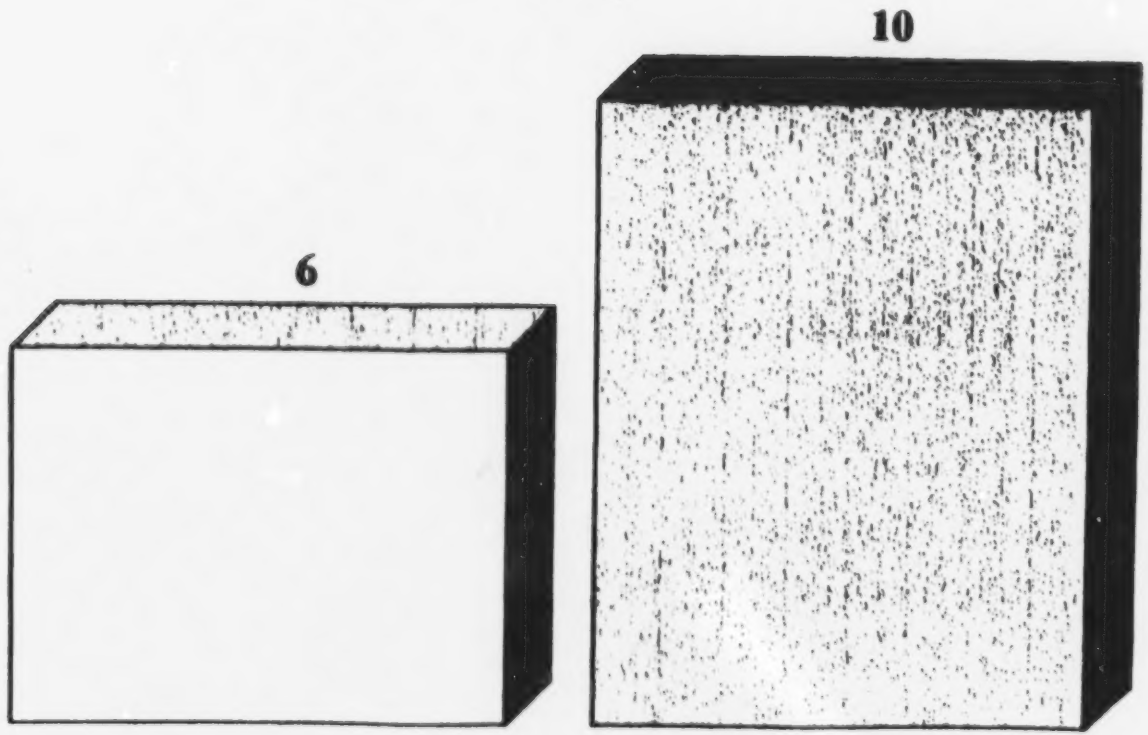
- Shorter periods of schooling
- Up-to-date, relevant training
- Technology competency
- Human relations skills
- Work experience
- Learning over the lifetime

Techforce 2000 Job Projections in Texas

- Increased competition for jobs among bachelor & above degreed individuals
- Many will be overqualified or working in other than major field
- 60% of new positions will only require an associates degree

INCREASE IN LABOR FORCE BY GENDER 1994 - 2005

(millions)



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